

MOTOR VEHICLE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a continuation of PCT Application No. PCT/SE99/02332, filed 14 December 1999, which claims priority to Swedish Application No. 9804431-6, filed 18 December 1998.

BACKGROUND OF THE INVENTION

[0002] Technical Field. The present invention relates to a motor vehicle designed to carry a fold-up warning triangle which can be removed from the vehicle. The term motor vehicle is here used in particular to signify a vehicle of the passenger car or delivery van type. The vehicle comprises an opening covered by a hatch such as a trunk hatch or engine hood. The hatch is arranged so that it can be moved between a closed position and an open position. The warning triangle is arranged in the vehicle in such a way that it gives a warning to other traffic when the hatch is in its open position.

[0003] Background Information. It is already known to secure a warning triangle on the inside of the rear hatch of a vehicle in such a way that the warning triangle is visible to following traffic when the rear hatch is open. Such an arrangement is described, for example, in German Patent Nos. DT 1 956 025 and DE 3 627 100. A common feature of these arrangements is that the warning triangle is secured to the inside of the hatch in such a way that its characteristic triangular shape is clearly evident to following traffic when the hatch is open. The advantages of such arrangements are obvious, as a visual warning signal is given to other traffic as soon as the hatch is opened. In addition, access to the warning triangle is made considerably easier since the warning triangle can be easily seized for the purpose of placing it on the road, even when the luggage space is full.

[0004] However, the known solutions are best suited to passenger cars of the sedan type which are equipped with a traditional trunk. Such trunk generally has no transparent surfaces and is instead entirely covered by sheet metal or other surface material. There is therefore no problem in accommodating the whole of the folded-up triangle on the inside of the trunk. However, in vehicles such as station wagons, mini-vans and multi-purpose vehicles (MPV), the rear hatch has relatively large glazed surfaces to which attachment of a folded-up warning

triangle is not possible due to visibility and road safety. The remaining, non-transparent part of the hatch often represents a small portion of the total surface area of the hatch and therefore, for reasons of space, does not permit attachment of a folded warning triangle. Another difficulty in applying the previously known solutions to a rear hatch of a vehicle of the multi-purpose type is that the hatch, in the open position, seldom has an inner surface essentially at right angles to the road surface on which the vehicle is standing, which is a prerequisite for the aforementioned solutions to be able to work.

SUMMARY OF THE INVENTION

[0005] The invention solves the above-mentioned problems by providing a motor vehicle designed to carry a fold-up warning triangle which can be removed from the vehicle. The vehicle has an opening defined by a boundary edge and covered by a hatch such as a trunk or hood. The hatch is arranged so that it can be moved between a closed position and an open position. The warning triangle in its folded-up position is secured in an edge portion of the hatch bearing against the boundary edge of the opening in the closed position of the hatch in such a way that a warning surface of the warning triangle is visible to other traffic when the hatch is in its open position.

[0006] In a preferred embodiment the folded-up warning triangle is releasably fitted in a recess in the edge portion of the hatch. The recess has a wall interrupted by at least one hole through which the warning surface is visible to other traffic when the hatch is in its opened position. The hole is preferably triangle-shaped as a symbolic representation of the shape of the warning triangle in its deployed position.

[0007] The proposed solution is considerably more compact than previously known arrangements without losing sight of the main function of providing a warning to other traffic when the hatch is in its open position.

[0008] Other features and advantages of the invention will become apparent from the following description of a preferred embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The invention will be described below on the basis of an illustrative embodiment and with reference to the attached drawings in which:

[0010] Figure 1 shows a partial, diagonal perspective view of a motor vehicle according to the invention with two folded-up warning triangles shown just before being placed into the recesses in the rear hatch, wherein one leg of the folded-up triangle is coated completely with reflective material;

[0011] Figure 2 shows a partial, perspective view of an alternative embodiment of the invention where one leg of the folded-up warning triangles is only partially covered with reflective material in a pattern corresponding to the shape of the holes which are formed in the walls of the recesses;

[0012] Figure 3 shows a rear perspective view of the vehicle, where the folded-up warning triangles are in their respective recesses, and where the reflective material is visible through the holes of the recesses in the rear hatch; and

[0013] Figure 4 shows a partial, diagonal perspective view of the rear part of the vehicle when the rear hatch is in its closed position, in which the reflective warning surfaces are no longer visible from outside the vehicle.

DETAILED DESCRIPTION OF THE INVENTION

[0014] In Figure 1, reference number 1 generally designates a motor vehicle according to the invention. The motor vehicle 1 includes station wagons, mini-vans, MPV's (multi-purpose vehicle) or SUV's (sports utility vehicle). The vehicle 1 has a rear hatch 5 which is shown in its opened position in Figure 1. The rear hatch 5 has a glazed, transparent part 11 and an unglazed and thus untransparent part 12. The rear hatch 5 is designed to cover an opening 4 in the rear part of the vehicle. The opening 4 is defined in turn by a boundary edge 3. The rear hatch 5 also has an edge portion 6 which bears against the boundary edge 3 of the opening 4 when the rear hatch 5 is in its closed position, which is shown in Figure 4.

[0015] In the preferred embodiment of the invention, the vehicle 1 is equipped with at least two fold-up warning triangles 2. In an alternative embodiment (not shown), the vehicle may be equipped with only one fold-up warning triangle 2. The warning triangles 2 preferably have a compact rectangular shape when folded up, as seen in Figure 1. The warning triangle 2 consists of three legs of equal length that together form an isosceles triangle when deployed (not shown). The legs of the warning triangle 2 are substantially coated with reflective material, for example, in the form of a reflector film that is fixed to the legs of the warning triangle 2 by

means such as an adhesive. The surface covered by the reflector material thus constitutes a warning surface 7. The basic concept of the invention is that the warning triangle 2, in the folded-up state, is secured in the above-mentioned edge portion 6 of the rear hatch 5 in such a way that the warning surface 7 of the warning triangle 2 is visible to other traffic when the hatch 5 is open. Figure 1 shows two folded-up triangles 2 just as they are about to be fitted into respective recesses 8 in the edge portion 6 of the rear hatch 5. However, the extent of the recess 8 can best be seen from Figure 3. The recesses 8 have outer boundary walls 9 which are interrupted by holes 10 through which the said warning surface 7 is visible to other traffic when the hatch 5 is in its opened position.

[0016] In the embodiment shown in Figure 1, the boundary walls 9 of the recesses 8 are interrupted by four holes 10 arranged alongside each other, of which three are triangle-shaped as a symbolic representation of the shape of the warning signal 2 in its deployed position. In the examples shown, the fourth hole 10 in each recess 8 is rectangular in order to illustrate that the holes may be of any shape. Figures 1 to 3 show that the warning surface 7, visible through the holes 10 in Figure 3, is substantially oriented at right angles to a road surface (not shown) when the rear hatch 5 is open. The warning surfaces 7 are immediately visible to other traffic behind the vehicle when the rear hatch 5 is opened. When the rear hatch 5 is closed again, the reflective warning surfaces 7 are no longer visible from outside the vehicle, as is shown in Figure 4.

[0017] In the embodiment shown in Figure 1, that side of the leg of the warning triangle 2 directed towards the holes 10 when the warning triangle 2 is releasably fitted into the recess 8 is essentially completely coated with reflective material. The boundary walls 9 and the holes 10 thus constitute slides of desired shape - preferably symbols of a warning triangle - through which a reflective warning surface 7 of the said shape is visible.

[0018] Figure 2 shows an alternative embodiment in which the side of the leg of the warning triangles 2 is only partially covered with reflective material, according to a pattern directly corresponding to the shape of the holes 10.

[0019] As the vehicle 1 illustrated is provided with two fold-up warning triangles 2, it is possible in an emergency for one of these to be removed from its recess 8, deployed and placed on the roadway at a prescribed distance behind the vehicle. At the same time the second warning

triangle 2 is left folded in its recess 8, whereby a warning to following traffic is also given locally from the vehicle when the rear hatch 5 is left in its opened position. Such an application of the two warning triangles 2 has a favorable and road safety-enhancing effect.

[0020] As has already been mentioned, the folded warning triangles 2 are releasably placed in the recesses 8. The warning triangles 2 are held in the recesses 8 by means of snap-fitting members in the form of a clip or the like, in such a way that they can easily be removed from the recesses 8.

[0021] A folded warning triangle 2 may be secured in the front part of the vehicle in the same way as has been described above. In such an embodiment, the recesses can be situated in the front part of the engine hood (not shown). Likewise, a warning triangle 2 may be placed in a vehicle door (not shown).

[0022] The invention is not limited to the illustrative embodiments described above and shown in the drawings, but may be varied within the scope of the attached patent claims.